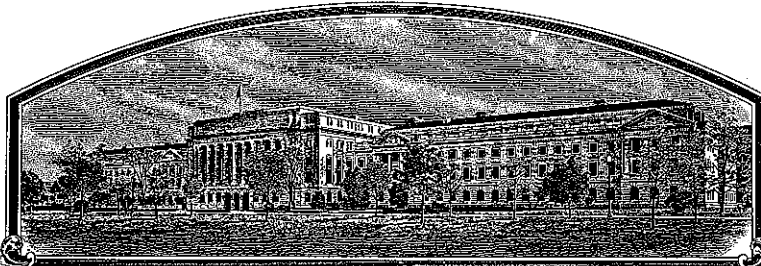


No.

200500056



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Arkansas Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR PROPAGATING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED IN THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

RICE

'Cybonnet'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-sixth day of July, in the year two thousand and five.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

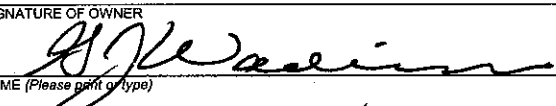


U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER Arkansas Agricultural Experiment Station		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME RU0001124		3. VARIETY NAME Cybonnet	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Agricultural Food and Life Sciences Building Room E108 University of Arkansas Fayetteville, AR 72701		5. TELEPHONE (include area code) (479) 575-6884		FOR OFFICIAL USE ONLY PVPO NUMBER 2005 000 56 FILING DATE 1/7/2005	
		6. FAX (include area code) (479) 575-8646			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Land Grant University		8. IF INCORPORATED, GIVE STATE OF INCORPORATION		9. DATE OF INCORPORATION	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Don Dombek, Director Arkansas Crop Variety Improvement Program 1091 W. Cassatt Street Fayetteville, AR 72704				F E E S R E C E I V E D FILING AND EXAMINATION FEES: \$ 3,652- DATE 1/7/05 CERTIFICATION FEE: \$ 432- DATE 4/25/05	
11. TELEPHONE (include area code) (479) 575-6884		12. FAX (include area code) (479) 575-8646		13. E-MAIL ddombek@uark.edu	
14. CROP KIND (Common Name) Rice		16. FAMILY NAME (Botanical) Poaceae		18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP Oryza sativa L.		17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input checked="" type="checkbox"/> NO (If "no", go to item 23)	
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED		22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)	
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)			
25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF OWNER 		SIGNATURE OF OWNER			
NAME (Please print or type) G. WEIDEMANN		NAME (Please print or type)			
CAPACITY OR TITLE DEAN		DATE 12/30/04		CAPACITY OR TITLE DATE	

(See reverse for instructions and information collection burden statement)

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. **Retain one copy for your files.** All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvpindex.htm>

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 <http://www.ams.usda.gov/lsg/seed.htm>.

ITEM

- 19a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

Seed of this variety was first offered for sale on January 17, 2004.

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Exhibit A. Origin and Breeding History of the Variety

'Cybonnet' rice (*Oryza sativa* L.) is a high-yielding, short-season, long-grain cultivar developed by the Arkansas Agricultural Experiment Station. Cybonnet originated from the cross 'Cypress'/'Newbonnet'/'Katy' (cross no.930288), made at the Rice Research and Extension Center, Stuttgart, AR, in 1993. Cypress released from Louisiana in 1993, is a semi-dwarf long-grain rice cultivar with excellent grain quality. Newbonnet is a high yielding, blast susceptible long-grain cultivar released from Arkansas in 1984. Katy is a blast resistant long-grain released from Arkansas in 1989. The experimental designation for early evaluation of Cybonnet was STG96F5-28-069, starting with a bulk of F_6 seed from the 1996 panicle row F5-28-069. Cybonnet was tested in the Arkansas Rice Performance Trials (ARPT) and the Cooperative Uniform Regional Rice Nursery (URRN) during 2000-2003 as entry RU0001124 (RU number indicated Cooperative Uniform Regional Rice Nursery; 00 indicates year entered; 01 indicates Stuttgart, AR; and 124 its initial entry number).

Year	Program Stage
2003	Foundation seed field- Uniform and Stable.
2000-2003	Arkansas Rice Performance Trials (4-6 loc) and URRN (4-5 loc)-Uniform and Stable- Rough rice and milling yields, height, maturity, straw strength, disease resistance and straighthead resistance.
1999	Arkansas Rice Performance Trials (4 loc)- Rough rice and milling yields, height, maturity, straw strength, disease resistance and straighthead resistance.
1998	Stuttgart Initial Test (2 locations) Preliminary data on rough rice and milling yields, height, maturity, straw strength, disease resistance.
1997	Preliminary Trials (1 location) Preliminary data on rough rice and milling yields, height, maturity, straw strength, disease resistance.
1996	F_5 Panicle row (single row) STG96F5-28-069-Selection based on plant and grain type. Bulk at this stage
1995	F_4 Panicle row (single row)-Single panicle decent/Pedigree- Selection based on plant and grain type
1994-95 (winter)	F_3 Panicle row (single row), Puerto Rico-Winter Nursery
1994	F_2 field-panicle selection based on plant type-Single panicle decent/Pedigree
1993-94	F_1 Greenhouse, Stuttgart, AR-Winter seed increase
1993	Crossing (930288)

Cybonnet was developed involving a variety of plant breeding methods including pedigree, bulk, and single panicle decent.

Cybonnet was uniform and stable in the F₉ generation and has remained so through 3 generations of reproduction through and including foundation seed production.

Variants, less than .02% overall, that have been rogued from the foundation seed fields of Cybonnet include the following: taller, earlier, later, glabrous or pubescent plants with open panicles, as well as intermediate or long-grains and grains with long awns. All of these variants are easily visually identified after heading in the field.

Exhibit B. Statement of Distinctness

Cybonnet is most similar to the variety Cocodrie. Unlike Cocodrie, however, Cybonnet has consistently better field resistance to blast disease, 1.0 and 2.0 vs. 1.1 and 5.9 for leaf and neck blast, respectively (Table 1); and straighthead physiological disorder 5.0 vs. 8.5 (Table 2) all on a 0-9 scale with 0 immune and 9 maximum susceptibility. Cybonnet also has a typical Southern Long Grain apparent amylose content of about 21.8% compared to Cocodrie with an Extra High amylose of 25.8% (Table 3).

Blast Disease caused by *Magnaporthe grisea*

Rice blast disease is rated visually on a 0-9 scale to estimate degree of severity. Numerical data is often converted to this scale. A rating of zero indicates complete disease immunity. A rating of one to three indicates resistance where little loss occurs and in the case of rice blast pathogen growth is restricted considerably. Conversely, a nine rating indicates maximum disease susceptibility, which typically results in complete plant death and/or yield loss. A disease rating of four to six is usually indicative of acceptable disease resistance under conditions slightly favoring the pathogen. Numerical ratings are sometimes converted to letter symbols where 0-3 = R (resistant), 3-4 = MR (moderately resistant), 5-6 = MS (moderately susceptible) 7 = S (susceptible) and 8-9 VS (very susceptible). Exceptions to established ratings do occur unexpectedly as disease situations change.

These data come from several sources. It is not unusual for ratings to vary with location and year due to environmental differences and research procedures. Ratings within a source traditionally have been consistent.

Greenhouse blast tests are the primary means of screening large number of entries for varietal reaction to the many blast races occurring in the production areas. Although results are quite variable and testing conditions tends to overwhelm any field resistance present in the entry, this test provides an accurate definition of the fungus-variety genetics. Blast field nurseries, utilizing both natural and lab produced inoculum, are established in an effort to better define blast susceptibility under field conditions. Since field nursery is also quite variable, new techniques are currently being developed and evaluated to better estimate cultivar field resistance to blast.

Field nurseries are established and artificially inoculated with a mixture of commonly occurring *Magnaporthe grisea* isolates to provide a uniform disease pressure for evaluations under field conditions. Grower nurseries are established operate in an effort to evaluate disease reactions in grower fields under current production practices. Over time these nurseries document variety performance under adverse disease conditions in Arkansas production fields.

Table 1. Field *Magnaporthe grisea* (leaf and neck blast) ratings from three years of inoculated trials at Pine Tree Experiment Station, Arkansas for Cybonnet and Cocodrie rice cultivars. (Average of 4 replications).

	<u>2001</u>		<u>2002</u>		<u>2003</u>		<u>AVG</u>	
	<u>Leaf Blast</u>	<u>Neck Blast</u>	<u>Leaf Blast</u>	<u>Neck Blast</u>	<u>Leaf Blast</u>	<u>Neck Blast</u>	<u>Leaf Blast</u>	<u>Neck Blast</u>
<u>Cybonnet</u>	0.8	0.0	1.3	3.8	0.8	2.2	1.0	2.0
<u>Cocodrie</u>	0.0	5.5	2.3	5.3	1.0	6.8	1.1	5.9

Straighthead

Straighthead is a physiological disorder which appears to be effected by the oxygen potential of the soil. Under certain conditions, arsenic levels can increase in these soils or on soils where cotton has been grown and MSMA or other arsenical pesticides have been applied. Soil applied MSMA mimics natural straighthead symptoms and is used for screening. Straighthead may also occur in soils high in organic matter. Symptoms can only be detected after panicle emerge and fail to produce grain. Foliage tends to remain dark green. Rice grains may be distorted especially on long-grain varieties forming a parrot-beak on the end of the hull. Floral parts may also be missing and under sever conditions panicles fail to emerge from the boot.

Table 2. Straighthead ratings for 2 years of field evaluations for Cybonnet and Cocodrie rice varieties. Stuttgart, AR.(Average of 3 replications).

STRAIGHTHEAD ¹	2002	2003	AVG
Cybonnet	6	4	5.0
Cocodrie	8	9	8.5

¹ Based on a scale of 0 to 9 where 0 = no symptoms and 9 = no grain formation.

Rating Scale:

- 0 = no damage
- 1 = 81-90% grain develop
- 2 = 71-80% grain develop & 96-100% panicles broken from vertical
- 3 = 61-80% grain develop & 91-95% panicles broken from vertical
- 4 = 41-60% grain develop & 61-90% panicles broken from vertical
- 5 = 21-40% grain develop & 31-60% panicles broken from vertical - initial appearance of parrot-beak distortion
- 6 = 11-20% grain develop & 10-30% panicles broken from vertical
- 7 = panicles emerged but totally up right; only 0-10% grain develop
- 8 = 0-10% panicle emergence, no seed produced
- 9 = no panicles

² Avg. of 3 reps.

Amylose

Table 3. Grain apparent amylose, gel and cook type of Cybonnet and Cocodrie taken from Uniform Regional Rice Nursery planted at Stuttgart, AR. Analyses performed by USDA rice quality lab, Beaumont, TX.

Cultivar	Year	Apparent Amylose(%)	Gel Type	Cook Type
Cybonnet	2002	21.4	Intermediate	Long Grain
	2003	22.1	Intermediate	Long Grain
Cocodrie	2002	25.2	Intermediate	Extra high amylose
	2003	26.4	Intermediate	Extra high amylose

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Exhibit C

NAME OF APPLICANT (S) Arkansas Agriculture Experiment Station	TEMPORARY OR EXPERIMENTAL DESIGNATION RU0001124	VARIETY NAME Cybonnet
ADDRESS (Street and No. or RD No., City, State, and Zip Code, Country) Agricultural Food and Life Science Building Room E108 University of Arkansas Fayetteville AR 72701		FOR OFFICIAL USE ONLY PVPO NUMBER 200500056

Place the appropriate number that describes the character of this variety in the spaces provided below. These numbers are also code numbers corresponding to descriptors developed by IBGR-IRRI Rice Advisory Committee and the US Rice Crop Advisory Committee. Breeders will demonstrate distinctness more readily by describing as many characters as is possible.

_____ Maturity Class 1 = Very Early (90 Days or Less) 2 = Early (91 – 97)
 3 = Intermediate (98 - 104) 4 = Late (More Than 104)

1 = Erect (Less than 30°) 3 = Intermediate (About 45°) 5 = Open (About 60°)
7 = Spreading (More than 60° but the culms do not rest on the ground)
9 = Procumbent (The culm or its lower part rests on the ground surface)

2. CULM: (continued)

LENGTH

1 0 1 6 cm (Soil level to top of extended panicle on main stem)2 5 cm Shorter Than Check Variety: WellsLength Same as Check Variety: Francis5 1 cm Longer than Check Variety: Cocodrie1 Height Class: 1 = Semidwarf 2 = Short 3 = Medium 4 = Tall1 Internode Color: (After Flowering): 1 = Green 2 = Light Gold 3 = Purple Lines 4 = Purple1 Strength (Lodging Resistance): 1 = Strong (no Lodging) 3 = Moderately Strong (Most Plants Leaning)
5 = Intermediate (Most Plants Lodged) 7 = Weak (Most Plants Flat)
9 = Very Weak (All Plants Flat)

3. FLAG LEAF: (After Heading)

3 9 • 8 cm Length 1 6 • 2 mm Width1 Pubescence: 1 = Glabrous 2 = Intermediate 3 = Pubescent1 Leaf Angle (After Heading): 1 = Erect 3 = Intermediate 5 = Horizontal 7 = Descending2 Blade Color: 1 = Pale Green 2 = Green 3 = Dark Green 4 = Purple Tips
5 = Purple Margins 6 = Purple Blotch 7 = Purple1 Basal Leaf Sheath Color: 1 = Green 2 = Purple Lines 3 = Light Purple 4 = Purple

4. LIGULE:

5 • 6 mm Length (From base of collar to the tip, at late vegetative stage)1 Color: (Late Vegetative Stage): 1 = White 2 = Purple Lines 3 = Purple2 Shape: 1 = Acute to Acuminate 2 = 2-Cleft 3 = Truncate1 Collar Color (Late Vegetative Stage): 1 = Pale Green 2 = Green 3 = Purple1 Auricle Color (Late Vegetative Stage): 1 = Pale Green 2 = Purple

5. PANICLE:

2 3 • 4 cm Length2 Type: 1 = Compact 5 = Intermediate 9 = Open1 Secondary Branching: 1 = Absent 2 = Light 3 = Heavy 4 = Clustering3 Exsertion (Near Maturity): 1 = Less than 90% 2 = 90 – 99% 3 = 100% Exserted2 Axis: 1 = Straight 2 = Droopy5 Shattering: 1 = Very Low (Less Than 1%) 3 = Low (1 – 5%) 5 = Moderate (6 – 25%)
7 = Moderately High (26 – 50%) 9 = High (More than 50%)3 Threshability: 1 = Difficult 2 = Intermediate 3 = Easy

6. GRAIN: (Spikelet)

0 Awns (After Full Heading): 0 = Absent 1 = Short and Partly Awned 5 = Short and Fully Awned
7 = Long and Partly Awned 9 = Long and Fully Awned3 Apiculus Color (At Maturity) 1 = White 2 = Straw 3 = Brown (Tawny) 4 = Red
5 = Red Apex 6 = Purple 7 = Purple Apex1 Stigma Color: 1 = White 2 = Light Green 3 = Yellow 4 = Light Purple 5 = Purple

6. GRAIN: (Spikelet)0 Lemma and Palea Color (At Maturity):

0 = Straw	1 = Gold and/or Gold Furrows on Straw Background	2 = Brown Spots on Straw (Piebald)
3 = Brown Furrows on Straw	4 = Brown (Tawny)	5 = Reddish to Light Purple
6 = Purple Spots on Straw	7 = Purple Furrows on Straw	8 = Purple
9 = Black	10 = White	

<u>1</u> Lemma and Palea Pubescence:	1 = Glabrous	2 = Hairs on Lemma Keel	3 = Hairs on Upper Portion
	4 = Short Hairs	5 = Long Hairs (Velvety)	

<u>1</u> Spikelet Sterility (At Maturity):	1 = Highly Fertile (> 90%)	3 = Fertile (75 – 90%)	5 = Partly Sterile (50 – 74%)
	7 = Highly Sterile (< 50% to Trace)	9 = Completely Sterile (0%)	

7. GRAIN: (Seed)

<u>2</u> Seed Coat (Bran) Color:	1 = White	2 = Light Brown	3 = Speckled Brown	4 = Brown
	5 = Red	6 = Variable Purple	7 = Purple	

<u>1</u> Endosperm Type:	1 = Nonglutinous (Nonwaxy)	2 = Glutinous (Waxy)	3 = Indeterminate
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<u>1</u> Endosperm Translucency:	1 = Clear	5 = Intermediate	9 = Opaque
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<u>1</u> Endosperm Chalkiness:	0 = None	1 = Small (Less than 10% of Sample)
	5 = Medium (10 – 20% of Sample)	9 = Large (More than 20% of Sample)

<u>0</u> Scent (Aroma):	0 = Nonscented	1 = Lightly Scented	2 = Scented
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Shape Class (Length/Width Ratio):

<u>3</u> Paddy	1 = Short (2.2:1 and Less)	2 = Medium (2.3:1 to 3.3:1)	3 = Long (3.4:1 and More)
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<u>3</u> Brown	1 = Short (2.0:1 and Less)	2 = Medium (2.1:1 to 3.0:1)	3 = Long (3.1:1 and More)
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<u>3</u> Milled	1 = Short (1.9:1 and Less)	2 = Medium (2.0:1 to 2.9:1)	3 = Long (3.0:1 and More)
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Measurements:

Grain Form	Length (mm)	Width (mm)	Thickness (mm)	L/W Ratio	1000 Grains (grams)
Paddy	<u>9.47</u>	<u>2.71</u>	<u>1.84</u>	<u>3.49</u>	<u>24.30</u>
Brown	<u>7.59</u>	<u>2.36</u>	<u>1.74</u>	<u>3.21</u>	<u>20.45</u>
Milled	<u>7.03</u>	<u>2.31</u>	<u>1.59</u>	<u>3.04</u>	<u>19.13</u>

29 Milling Quality (% Hulls)60 Milling Yield (% Whole Kernel (head) Rice to Rough Rice)ND % Protein21.8 % AmyloseAlkali Spreading Value: ND 1.5% KOH Solution 3-5 1.7% KOH Solution

<u>5</u> Gelatination Temperature Type:	1 = High	5 = Intermediate	7 = Low
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Amylographic Paste Viscosity (Brabender Units)

Peak	Hot Paste	Cooled Paste	"Breakdown" "Setback"
<u>199</u>	<u>129</u>	<u>244</u>	<u>70</u> <u>44</u>

8. RESISTANCE TO LOW TEMPERATURE:

<u>2</u> Germination and Seedling Vigor:	1 = Low	2 = Medium	3 = High
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<u>NT</u> Flowering (Spikelet Fertility):	1 = Low	2 = Medium	3 = High
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9. SEEDLING VIGOR NOT RELATED TO LOW TEMPERATURE:

<u>2</u> Vigor:	1 = Low	2 = Medium	3 = High
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10. BLAST RESISTANCE: (*Pyricularia oryzae*). (International races found under References)

0 = Immune 1 = Resistant 3 = Moderately Resistant 5 = Intermediate 7 = Moderately Susceptible 9 = Susceptible

Group	IB					IC		ID	IE	IG	IH	IE-1K
Number	1	X 33	45	49	54	1	17	1	13	1	1	1
Resistance	<u>2.3</u>	<u>6.5</u>	<u>NT</u>	<u>5.3</u>	<u>0.0</u>	<u>NT</u>	<u>4.3</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>1.0</u>	<u>0.0</u> <u>8.0</u>

11. RESISTANCE TO OTHER DISEASES:

0 = Immune 1 = Resistant 3 = Moderately Resistant 5 = Intermediate 7 = Moderately Susceptible 9 = Susceptible

<u>NT</u> Narrow Brown Leaf Spot (<i>Cerospora oryzae</i>)	<u>NT</u> Aggregate Sheath Spot (<i>Rhizoctonia oryzae-sativae</i>)
<u>NT</u> Leaf Smut (<i>Entyloma oryzae</i>)	<u>5</u> Straight Head
<u>1</u> Brown Leaf Spot (<i>Helminthosporium oryzae</i>) (= <i>Bipolaris oryzae</i>) (= <i>Drechslera oryzae</i>)	<u>9</u> Kernel Smut (<i>Neovossia horrida</i>) (= <i>Tilletia barclayana</i>)
<u>NT</u> Leaf Scald (<i>Gerlachia oryzae</i>)	<u>NT</u> White Tip Nematode (<i>Aphelenchoides besseyi</i>)
<u>NT</u> Hoja Blanca Virus	<u>7</u> Stem Rot (<i>Sclerotium oryzae</i>)
<u>7</u> Sheath Rot (<i>Sarocladium oryzae</i>)	
<u>NT</u> Pythium Seedling Blight (<i>Pythium</i> sp.)	<u>NT</u> Bacterial Blight (<i>Xanthomonas campestris</i> pv. <i>oryzae</i>)
<u>NT</u> Sheath Spot (<i>Rhizoctonia oryzae</i>)	<u>9</u> Sheath Blight (<i>Rhizoctonia solani</i>)
Other: _____	

12. INSECT RESISTANCE:

0 = Immune 1 = Resistant 3 = Moderately Resistant 5 = Intermediate 7 = Moderately Susceptible 9 = Susceptible

<u>NT</u> Grasshopper	<u>3</u> Rice Stink Bug (<i>Oegalus pugnax</i>)
<u>NT</u> Rice Leafhopper	<u>NT</u> Swarm Caterpillar
<u>NT</u> Rice Hispa	<u>NT</u> Rice Water Weevil (<i>Lissorhoptrus oryzophilus</i>)
<u>NT</u> Rice Midge	<u>NT</u> Rice Stalk Borer (<i>Chilo plejadellus</i>)
<u>NT</u> Least Skipper	<u>NT</u> Sugarcane Borer (<i>Diatraea saccharalis</i>)

13. OTHER DESCRIPTORS: If there are other characters that describe this variety, please indicate below:

Cybonnet has average fieldleaf blast rating of 1.0 and neck blast rating of 2.0 on a scale of 0 to 9.

REFERENCES

- C. R. Adair *et al.* 1972. Rice in the United States: Varieties and Production. USDA Handbook No. 289 (Rev.), 124 pp.
- J. G. Atkins *et al.* 1967. An International Set of Rice Varieties for Differentiating Race of *Pyricularia Oryzae*. Phytopath. 57:297-301.
- IBPGR-IRRI Rice Advisory Committee. 1980. Descriptors for Rice *Oryzae Sativa* L. International Rice Research Institute. 21 pp.
- K. C. Ling and S. H. Ou, 1969. Standardization of the International Race Numbers of *Pyricularia Oryzae*. Phytopath. 59:339-342.
- B. D. Webb *et al.* 1985. Utilization Characteristics and Qualities of United States Rice. In Proceedings on Rice Grain Quality and Marketing. International Rice Research Institute (IRRI), Los Branos, Philippines. P. 25-35.

Exhibit D. Additional description of the Variety

Rough Rice and Milling Yield: Averaged over 20 Arkansas Rice Performance Trials (ARPT), rough rice grain yields of Cybonnet, 'Ahrent', Wells, 'Francis', Kaybonnet, 'Drew', Cocodrie, and Cypress were 8542, 8542, 9654, 9856, 8289, 8592, 8794, and 8137, kg ha⁻¹ (120 g kg⁻¹ (12%) moisture), respectively. Data from the URRN conducted at Arkansas, Louisiana, Mississippi, and Texas during 2000 - 2002 showed Cybonnet average grain yield of 9553 kg ha⁻¹ compared with those of Ahrent, Wells, Francis, 'Saber', Drew, Cocodrie, and Cypress at 8390, 10260, 10715, 8643, 8997, 9603, and 8491 kg ha⁻¹, respectively. Milling yields (mg g⁻¹ whole kernel:mg g⁻¹ total milled rice) at 120 mg g⁻¹ moisture from the ARPT, 2000-2003, averaged 680:720, 640:700, 640:730, 650:720, 660:720, 660:720, 670:720, and 680:720 for Cybonnet, Ahrent, Wells, Francis, Kaybonnet, Drew, Cocodrie, and Cypress, respectively. Milling yields for the URRN during 2000 - 2002, averaged 610:700, 580:690, 570:670, 560:700, 610:680, 600:690, 600:690, and 620:690 for Cybonnet, Francis, Ahrent, Wells, Saber, Drew, Cocodrie, and Cypress, respectively. Cybonnet yields slightly less, from 252 to 50 kg ha⁻¹, and results in milling yields slightly higher, from 10:00 to 10:10, than Cocodrie.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) Arkansas Agricultural Experiment Station	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER RU0001124	3. VARIETY NAME Cybonnet
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Agricultural Food and Life Sciences Building Room E108 University of Arkansas Fayetteville AR 72701	5. TELEPHONE (Include area code) (479) 575-6884	6. FAX (Include area code) (479) 575-8646
	7. PVPO NUMBER 200500056	

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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